

REMARKS

The Office Action mailed May 20, 2009 has been carefully reviewed and the foregoing amendment has made in consequence thereof.

Claims 1-10 and 24-32 are pending in this application. Claims 1-10 and 24-32 stand rejected.

The rejection of Claims 1-10 under 35 U.S.C. § 103(a) as being unpatentable over U.K. Patent Application GB 2 052 251 to Licentia Patent-Verwaltungs-GmbH (hereinafter referred to as “Licentia”) in view of either U.S. Patent No. 3,223,108 to Martz, Jr. (hereinafter referred to as “Martz”) or U.S. Patent No. 5,315,847 to Takeda et al. (hereinafter referred to as “Takeda”) is respectfully traversed.

Initially, Applicant respectfully traverses the assertion at page 3-4 of the Office Action that:

[T]he steps function or method of operation of the controller is of little patentable weight given that the applied prior [*sic*] discloses all of the claimed structure; the device is clearly capable of functioning as claimed. It is the examiner’s position that all that is required of the prior art is that the same be capable of, or having the ability of functioning as claimed, with the prior art not having to explicitly state the claimed steps, function or method of operation. It is also known that microcontroller/processors inherently have many possible control scenarios and that same is clearly capable of functioning/operating as claimed with the proper programming.

Independent Claim 1, as amended, positively recites a controller including “a microcomputer coupled to a memory storing instructions that, when executed by the microcomputer, directs said controller” to perform the stored instructions. Applicant respectfully submits that the steps recited in the presently pending claims dictate the structure of the claimed memory and, thus, the claimed controller. As such, Applicant respectfully submits that such features recite “what a device is, not what a device does.” MPEP § 2114 (citing Hewlett-Packard Co. v. Bausch & Lomb Inc., 909 F.2d 1464, 1469 (Fed. Cir. 1990) (emphasis in original)). Accordingly, Applicant respectfully submits that such features must be given patentable weight.

Moreover, Applicant respectfully submits that the elements recited in Applicant's claimed invention are not inherent in a controller, but rather are structurally distinguishable from the cited art. See generally MPEP § 2114 (emphasis added). MPEP § 2112 requires that an Examiner provide a rationale or evidence tending to show inherency. (Citing Ex parte Levy, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990) ("In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art.")). MPEP § 2112 further recites:

The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. "To establish inherency, the extrinsic evidence 'must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.'"

(Citations omitted) (emphasis added).

Independent Claim 1, as amended, positively recites a controller including "a microcomputer coupled to a memory storing instructions that, when executed by the microcomputer, directs said controller to: determine a desirable achievable rinse level; at predetermined fluid levels during the rinse cycle, measure an average liquid conductivity; calculate an overall change in conductivity based on the measured average liquid conductivity at each predetermined fluid level; compare the calculated overall change in conductivity to the desirable achievable rinse level; and cease the rinse cycle when the overall change in conductivity exceeds an acceptable change percentage of the desirable achievable rinse level." Applicant respectfully submits that such recitations are not inherent in washing machines or controllers. (Emphasis added). Rather, such recitations are a claimed feature of the controller described in the present patent application. While Applicant concedes that "microcontroller/processors inherently have many possible control scenarios," the Examiner relies solely on a probability or possibility that a controller could be configured to perform the recitations of Applicant's claimed invention. Applicant respectfully submits that such recitations are not inherent in a controller and, therefore, must be given patentable weight.

Licentia describes a washing machine that includes a means for measuring surface tension, a means for measuring pH, and a means for measuring conductivity. The washing machine measures an electrical conductivity of each washing liquid during operation of the machine and fresh water to be used in the machine, compares the measured amounts of electrical conductivity, and controls the supply of washing agent based on the comparison.

Martz describes a washing machine including an electrical apparatus, a sensing control (48), and a timer (49) to control operation of the washing machine. A timer motor (70) drives a series of cams (A)-(E) that actuate a series of switches (71)-(79) for supplying power from a pair of supply lines (80) and (81) to the electrical apparatus. More specifically, power is supplied to sensing control (48) through a transformer (90) having a primary winding (91) and secondary windings (92) and (93). Secondary winding (92) includes resistors (94) and (95), sensing units (32) and (40), and a resistor (96) in series with a sensing unit (32). Sensing unit (32) measures a conductivity of the supply water and a conductivity of the rinse water, and sensing control (48) compares the conductivity of the supply water to the conductivity of the rinse water.

Takeda describes a washing machine that includes a washing/dehydrating tank (5), an agitation blade (6), a water storage tank (7), and a sensor (15) for detecting an electric conductivity of washing water in washing/dehydrating tank (5) and water storage tank (7). During a rinsing step, sensor (15) detects a conductivity of the rinsing water before rotation of agitation blade (6) and a conductivity of the rinsing water after rotation of agitation blade (6). The conductivities are compared and calculated to determine a number of rinsing cycles to achieve an appropriate rinsing operation in accordance with the detergent contained in washing/dehydrating tank (5). A detection signal of the soiled condition of washing water from an inverter (43(B)) is in a rectified rectangular wave form.

Independent Claim 1, as amended, is directed to a washing machine including a controller that includes a microcomputer coupled to a memory storing instructions that, when executed by the microcomputer, directs the controller to determine a desirable achievable rinse level, measure an average liquid conductivity at predetermined fluid levels during the rinse cycle, calculate an overall change in conductivity based on the measured average liquid conductivity at each predetermined fluid level, compare the calculated overall change in conductivity to the desirable achievable rinse level, and cease the rinse cycle when the overall change in conductivity exceeds an acceptable change percentage of the desirable achievable

rinse level. As set forth above, Applicant respectfully submits that such recitations must be given patentable weight.

Applicant respectfully submits that no combination of Licentia and Martz or Takeda describes or suggests a controller that includes a microcomputer coupled to a memory for storing instructions that, when executed by the microcomputer, directs the controller to determine a desirable achievable rinse level, measure an average liquid conductivity at predetermined fluid levels during the rinse cycle, calculate an overall change in conductivity based on the measured average liquid conductivity at each predetermined fluid level, compare the calculated overall change in conductivity to the desirable achievable rinse level, and cease the rinse cycle when the overall change in conductivity exceeds an acceptable change percentage of the desirable achievable rinse level. Rather, Licentia describes a method of determining a number of rinsing operations based on when the rinsing water reaches the conductivity of the water introduced into the washing machine, Martz describes a control circuitry, including sensors and resistors, configured to rinse a detergent from a wash load using conductivities of water supplied to a washing machine and of a liquid within the washing machine, and Takeda describes a method of determining a number of rinsing operations based on a difference in the conductivity of the water in the washing machine before rotation of the agitation blade and after rotation of the agitation blade in the rinse cycle.

Moreover, no combination of Licentia and Martz or Takeda describes or suggests a resistance network including a sensor and a voltage source operable to provide a sinusoidal wave input or a square wave input to facilitate deterring mineral buildup on the sensor. It is asserted on page 2 of the Office Action that “Martz (see fig. 2) and Takeda (see fig. 7) each disclose the resistance network, resistor and voltage source in a conductivity sensor as claimed.” Applicant respectfully disagrees with the Examiner’s finding and interpretation.

Figure 2 of Martz is a schematic circuit diagram of a control, and Figure 7 of Takeda is a wiring diagram of an oscillation circuit of a sensor. Notably, nowhere does Martz or Takeda describe or suggest a voltage source operable to provide a sinusoidal wave input or a square wave input to facilitate deterring mineral building up on a sensor.

Accordingly, for at least the reasons set forth above, Claim 1 is submitted to be patentable over Licentia in view of Martz or Takeda.

Claims 2-10 depend from independent Claim 1. When the recitations of Claims 2-10 are considered in combination with the recitations of Claim 1, Applicant submits that dependent Claims 2-10 likewise are patentable over Licentia in view of Martz or Takeda.

For at least the reasons set forth above, Applicant respectfully requests that the Section 103 rejection of Claims 1-10 be withdrawn.

The rejection of Claims 24-32 under 35 U.S.C. § 103(a) as being unpatentable over either U.K. Patent Application GB 2 266 898 to Hotpoint Limited (hereinafter referred to as “Hotpoint”) or European Patent Application 0 686 721 to Whirlpool Europe B.V. (hereinafter referred to as “Whirlpool”) in view of Martz, Takeda, or U.S. Patent No. 5,260,663 to Blades (hereinafter referred to as “Blades”) is respectfully traversed.

Initially, Applicant respectfully traverses the assertion at pages 8-9 of the Office Action that:

[I]t is the examiner’s position that . . . with proper programming, [Hotpoint] and [Whirlpool] are clearly capable of and have the ability of functioning as claimed.

Independent Claim 24, as amended, positively recites a fluid delivery and draining assembly including “a microcomputer coupled to a memory storing instructions that, when executed by the microcomputer, directs said fluid delivery and draining assembly” to perform the stored instructions. Applicant respectfully submits that the steps recited in the presently pending claims dictate the structure of the claimed memory and, thus, the claimed fluid delivery and draining assembly. As such, Applicant respectfully submits that such features recite “what a device is, not what a device does.” MPEP § 2114 (citing Hewlett-Packard Co. v. Bausch & Lomb Inc., 909 F.2d 1464, 1469 (Fed. Cir. 1990) (emphasis in original)). Accordingly, Applicant respectfully submits that such features must be given patentable weight.

Moreover, Applicant respectfully submits that the elements recited in the Applicant’s claimed invention are structurally distinguishable to the cited art. See generally MPEP § 2114 (emphasis added).

Independent Claim 24, as amended, positively recites a fluid delivery and draining assembly including “a microcomputer coupled to a memory storing instructions that, when executed by the microcomputer, directs said fluid delivery and draining assembly to:

determine a desirable achievable rinse level; at predetermined fluid levels during the rinse cycle, measure an average liquid conductivity; calculate an overall change in conductivity based on the measured average liquid conductivity at each predetermined fluid level; compare the calculated overall change in conductivity to the desirable achievable rinse level; and cease the rinse cycle when the overall change in conductivity exceeds an acceptable change percentage of the desirable achievable rinse level.” Applicant respectfully submits that the Examiner cannot rely solely on a probability or possibility that a fluid delivery and draining assembly could be configured to perform the recitations of Applicant’s claimed invention. Rather, Applicant respectfully submits that such recitations are a claimed feature of the controller described in the present patent application, and that such recitations must be given patentable weight.

Hotpoint describes a washing machine including a tub (3) and a conductivity sensor (12) that detects a conductivity of liquid in tub (3). A rinse operation of the washing machine is based on the conductivity of liquid in tub (3). More specifically, a rinse stage is terminated based on a rate of change of the conductivity of liquid.

Whirlpool describes a washing machine including a conductivity sensor (14), a control unit (15), a current sensor (16), a pressure sensor (17), and a temperature sensor (18). Control unit (15) receives signals from sensors (14), (16), (17), and (18) and controls solenoid valves (8), (12), (13), a flowmeter (18A), a heating element (19), a discharge pump (20), and/or an electric motor control member (21). Conductivity sensor (14) measures a conductivity of water that has come into contact with clothes and a conductivity of water that has been introduced to a tub (3) but has not yet come into contact with clothes, and control unit (15) operates in accordance with fuzzy logic based on the measured conductivities of water.

Martz and Takeda are described above.

Blades merely describes a cell including electrodes (14) and (16) that measure a conductivity of liquid positioned between electrodes (14) and (16).

Independent Claim 24, as amended, is directed to a washing machine including a fluid delivery and draining assembly that includes a microcomputer coupled to a memory storing instructions that, when executed by the microcomputer, directs the fluid delivery and draining assembly to determine a desirable achievable rinse level, measure an average liquid

conductivity at predetermined fluid levels during the rinse cycle, calculate an overall change in conductivity based on the measured average liquid conductivity at each predetermined fluid level, compare the calculated overall change in conductivity to the desirable achievable rinse level, and cease the rinse cycle when the overall change in conductivity exceeds an acceptable change percentage of the desirable achievable rinse level. As set forth above, Applicant respectfully submits that such recitations must be given patentable weight.

Applicant respectfully submits that no combination of Hotpoint or Whirlpool and Martz, Takeda, or Blades describes or suggests a fluid delivery and draining assembly that includes a microcomputer coupled to a memory for storing instructions that, when executed by the microcomputer, directs the fluid delivery and draining assembly to determine a desirable achievable rinse level, measure an average liquid conductivity at predetermined fluid levels during the rinse cycle, calculate an overall change in conductivity based on the measured average liquid conductivity at each predetermined fluid level, compare the calculated overall change in conductivity to the desirable achievable rinse level, and cease the rinse cycle when the overall change in conductivity exceeds an acceptable change percentage of the desirable achievable rinse level. Rather, Hotpoint describes a washing machine that terminates a rinse stage based on a rate of change of a conductivity of a liquid, Whirlpool describes a washing machine that operates in accordance with fuzzy logic based on a measured conductivity of water, Martz describes a control circuitry, including sensors and resistors, configured to rinse a detergent from a wash load using conductivities of water supplied to a washing machine and of a liquid within the washing machine, Takeda describes a method of determining a number of rinsing operations based on a difference in the conductivity of the water in the washing machine before rotation of the agitation blade and after rotation of the agitation blade in the rinse cycle, and Blades merely describes a cell including electrodes that measure a conductivity of a liquid.

Accordingly, for at least the reasons set forth above, Claim 24 is submitted to be patentable over Hotpoint or Whirlpool in view of Martz, Takeda, or Blades.

Claims 25-32 depend from independent Claim 24. When the recitations of Claims 25-32 are considered in combination with the recitations of Claim 24, Applicant submits that dependent Claims 25-32 likewise are patentable over Hotpoint or Whirlpool in view of Martz, Takeda, or Blades.

For at least the reasons set forth above, Applicant respectfully requests that the Section 103 rejection of Claims 24-32 be withdrawn.

In view of the foregoing amendment and remarks, all the claims now active in this application are believed to be in condition for allowance. Reconsideration and favorable action are respectfully solicited.

Respectfully submitted,

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